Raj Garkhedkar

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IMMEDIATE OBJECTIVE

Senior Physics and Data Science student. Passionate about applying myself and my academic knowledge to fuel innovation. Particularly interested in applying physical/mathematical/statistical insight machine learning applications for the latest and coolest technologies. In the physical domain, I am trained in optics/photonics.

PROJECT & PROFESSIONAL EXPERIENCE

MACHINE LEARNING ENGINEER INTERN *COLSA Corporation, Huntsville, AL*

Summer 2021

- SciML – dimensionality reductions/transforms, nonlinear dynamics & control theory implementation. Used Python & Julia for signal processing & noise analysis
- Sparse Identification of Nonlinear Dynamical systems (SINDy) modeling and optimization work through PySINDy – algorithmic discovery of differential equations that model nonlinear systems through fundamental governing principles (Lorenz 63 & Korteweg-De Vries Equation)
- Algorithm development through the mathematical construct behind neural networks to tailor activation functions, loss functions, and network layers through modeling ordinary/partial differential equations, linear algebra, abstract algebra, & data structures

DATA ENGINEERING INTERN *Enkon Energy Advisors, Houston, TX*

Summer 2019 and Summer 2020

- Used Python to create web scraper script, to capture daily NGL flows from various pipelines throughout the country at their receipt/delivery points. The web-scraped data is automatically appended to our databases thus fully automating the data collection behind consulting projects.
- Wrote an article, published in Enkon's monthly newsletter, on the Current State of Liquefied Natural Gas where I examined the headwinds and drivers that guided the first and second wave of LNG Projects and global exports, also examined the global supply and demand.
- Completed with over 4000 lines of Python code with my own helper functions to ease analytics.

ROBOTICIST *Illinois Wesleyan Univ., Bloomington, IL*

Fall 2020 and Spring 2021

- Designing and building a robot modeled after the Boston Dynamics dog, controlled via a PlayStation controller. All CAD and programming work done independently by my team.
- This work will be presented at a research conference in April.

EDUCATION

ILLINOIS WESLEYAN UNIVERSITY, Bloomington, IL

Bachelor of Science in Physics, Minor in Data Science, Fall 2021

- GPA: 3.3/4.0
- Courses: Physics I/II, Modern Physics, Calculus sequence, Mathematical Methods in Physics, Scientific Imaging, Computer Science I, Quantum Mechanics, Electricity & Magnetism, Experimental Physics, Momentum of Photons, Discrete Mathematics, Statistics for Economics, Applied Data Analysis, Deep Learning, How Things Work, Entrepreneurship, Nanoelectronics
- Member of: IEEE, APS, SPIE, SPS and data science club

ADDED COMPETENCIES

- Python (PySINDy, Pandas, BeautifulSoup, Selenium, Openpyxl, Pingouin, scikit-learn, SciPy)
- PyTorch, TensorFlow
- Igor Pro
- SQL (beginner)
- Tableau & MS Office Suite
- Julia (for Scientific Machine Learning)
- Mathematica
- MATLAB (beginner)
- C++ (beginner)
- Git
- Amplification, op-amps, Quanta measurement
- AutoDesk *AutoCAD*, AutoDesk *Fusion 360*
- NI LabVIEW programming (beginner)

ADDITIONAL INFORMATION

- Experience with rigorous machine learning frameworks for scientific applications
- Coursework in Predictive Analytics, Machine Learning, Regression, Data Cleaning and Data Analysis.
- Multi-layer neural networks built in class for class projects i.e. classifying dog breeds, etc.
- Trained to always keep an eye on emerging opportunities.
- Trained to check, carefully, key claims that work/innovation depends upon.
- Trained to ground conversations in reliable principles (by returning to what's fundamental).
- Trained to gain insight by considering extreme limiting cases.
- Trained to write & document before, during, and after work.
- Proficient in English, natively speak Hindi & Marathi, limited working proficiency in Spanish.
- I am a soccer and Formula 1 fan; but I love watching all sports.
- U.S. Citizen

REFERENCES

- Ames Professor of Physics, Gabriel C. Spalding <gspaldin@iwu.edu>
- Associate Professor of Psychology & Data Science, Brad Sheese <bsheese@iwu.edu>
- Professor of Physics, Bruno deHarak <bdeharak@iwu.edu>
- Professor of Physics, Thushara Perera <tperera@iwu.edu>